

IN THE CLAIMS

Complete listing of the claims:

1. (Currently amended) A laser based coordinate measuring device for measuring a position of a remote target, the measuring device comprising:

a ~~stationary~~first portion having at least a first ~~laser radiation~~light source ~~and at least~~ a first optical detector;

a ~~rotatable~~second portion ~~mounted on the stationary portion~~, and rotatable with respect to the ~~stationary~~first portion;

a first motor structured to rotate the second portion with respect to the first portion;
and

at least a first optical fiber system ~~for optically interconnecting the first laser radiation source and the first optical detector with~~ that connects to both the first light source and the first optical detector, the first optical fiber system having an emission end ~~of the first optical fiber system, the emission end disposed on the rotatable second portion for emitting laser radiation and configured to emit light~~ to the remote target and ~~for receiving laser radiation to receive light~~ reflected from the remote target,

wherein an emission direction of the laser radiation is ~~controlled according to the rotation of the rotatable portion~~fixed with respect to the second portion.

2. (Currently amended) The ~~laser based coordinate measuring device~~ according to claim 1, wherein the first optical fiber system includes at least first, second, and third optical fibers and a coupler assembly, ~~wherein the first optical fiber for directing light to the rotatable portion from the laser radiation source, the second optical fiber for directing light from the rotatable portion to the optical detector, and the third optical fiber having has~~ the emission end and coupled to the first and second optical fibers by the coupler assembly.

3. (Currently amended) The ~~laser based coordinate measuring device~~ according to claim 2, wherein the coupler assembly is disposed on one of the ~~rotatable~~second portion and the ~~stationary~~first portion.

4. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 1, wherein the ~~laser-based coordinate measuring device~~ is structured to determine the distance from the device ~~three dimensions of position and three dimensions of orientation corresponding to the remote target.~~

5. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 1, further comprising a second ~~laser radiation light~~ source ~~disposed on the stationary portion~~ and a second optical fiber system for optically interconnecting the second ~~laser radiation light~~ source and the ~~rotatable second~~ portion, ~~a wavelength of second laser radiation source being different than a wavelength of the first laser radiation source.~~

6. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 5, further comprising a beam combiner disposed on the ~~rotatable second~~ portion for receiving and combining ~~laser radiation light~~ emitted from the first and second optical fiber systems into a substantially single composite beam.

7. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 6,

wherein the beam combiner includes at least one beam splitter, and

wherein ~~the laser radiation light~~ from one of the first and second optical fiber systems ~~is incident from a first side of the beam splitter and being transmitted through the beam splitter, and~~

wherein ~~the laser radiation light~~ from the other one of the first and second optical fiber systems ~~is incident from a second side of the beam splitter and being reflected off the beam splitter, and~~

wherein the light transmitted through the beam splitter and the light reflected from off the beam splitter are combined, to become combined with the laser radiation from the first optical fiber system transmitted through the beam splitter.

8. (Cancelled)

9. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 1, further comprising a beam expander to expand the diameter of a beam including the ~~laser radiation light~~ from the first optical fiber system.

10. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 1, wherein the remote target includes a retroreflector.

11. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 10, further comprising a position detector ~~for detecting a position of the emitted laser radiation relative to the retroreflector,~~ structured to detect light reflected from the remote target.

12. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 11, further comprising an actuator structured to control ~~for controlling~~ the rotation of the ~~rotatable second~~ portion in accordance with a ~~result the light detected by~~ of the position detector.

13. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 1, wherein the further comprising a first motor is disposed to rotate the rotatable second portion about a first axis, and wherein the device further comprises:

a first angular encoder to measure the rotation of the ~~rotatable second~~ portion about the first axis;

-a second motor ~~disposed to rotate the rotatable second~~ portion about a second axis; and

~~and~~ a second angular encoder to measure the rotation of the ~~rotatable second~~ portion about the ~~first second~~ axis; and

-wherein the first and second axes are substantially orthogonal with respect to each other.

14. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 13, wherein a ~~first segment portion~~ of the first optical fiber system is disposed near along one of the first axis and a ~~second portion of the first optical fiber system is disposed along~~ the second axis.

15. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 14, wherein the ~~segment of the first optical fiber system first portion~~ allows rotation ~~along about at least one~~ the first axis without disturbing signals carried by the ~~first optical fiber system and the second portion~~ allows rotation along the second axis without disturbing signals carried by the first optical fiber system.

16. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 1, wherein the first optical detector is a part of an absolute distance meter.

17. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 16, further comprising an incremental distance meter.

18. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 1, wherein the first optical detector is a part of an incremental distance meter.

19. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 1, further comprising a locator camera ~~to determine an approximate position of the remote target so that the rotatable portion can be oriented to direct the laser radiation to the remote target.~~

20. (Currently amended) The ~~laser-based coordinate measuring device~~ according to claim 1, further comprising an orientation camera structured to determine the orientation of image the remote target.

21-42. (Cancelled)

43. (New) The device according to claim 1, wherein the first fiber optical system is optically coupled to a first optical fiber termination disposed on the second portion;

and the device further comprises a collimator disposed on the second portion, the collimator being configured to collimate light emitted from the first fiber termination.